The Virtual Datacentre

Enterprise IT in the era of Cloud Computing

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The views expressed in this presentation are my own and don't necessarily represent IBM's positions, strategies or opinions

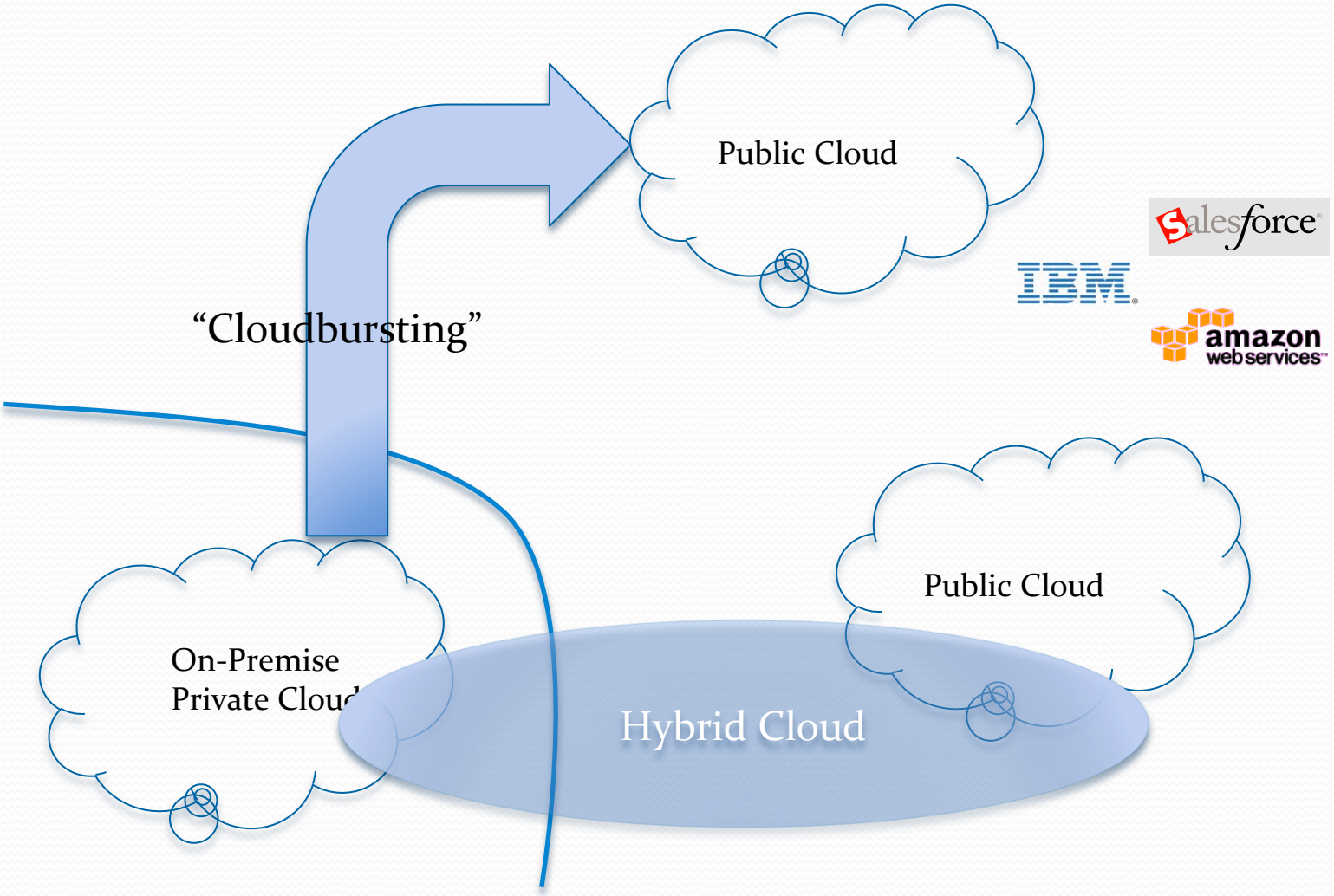
Agenda

- History
- Definitions
- Impact
- Practical Steps
- The Future

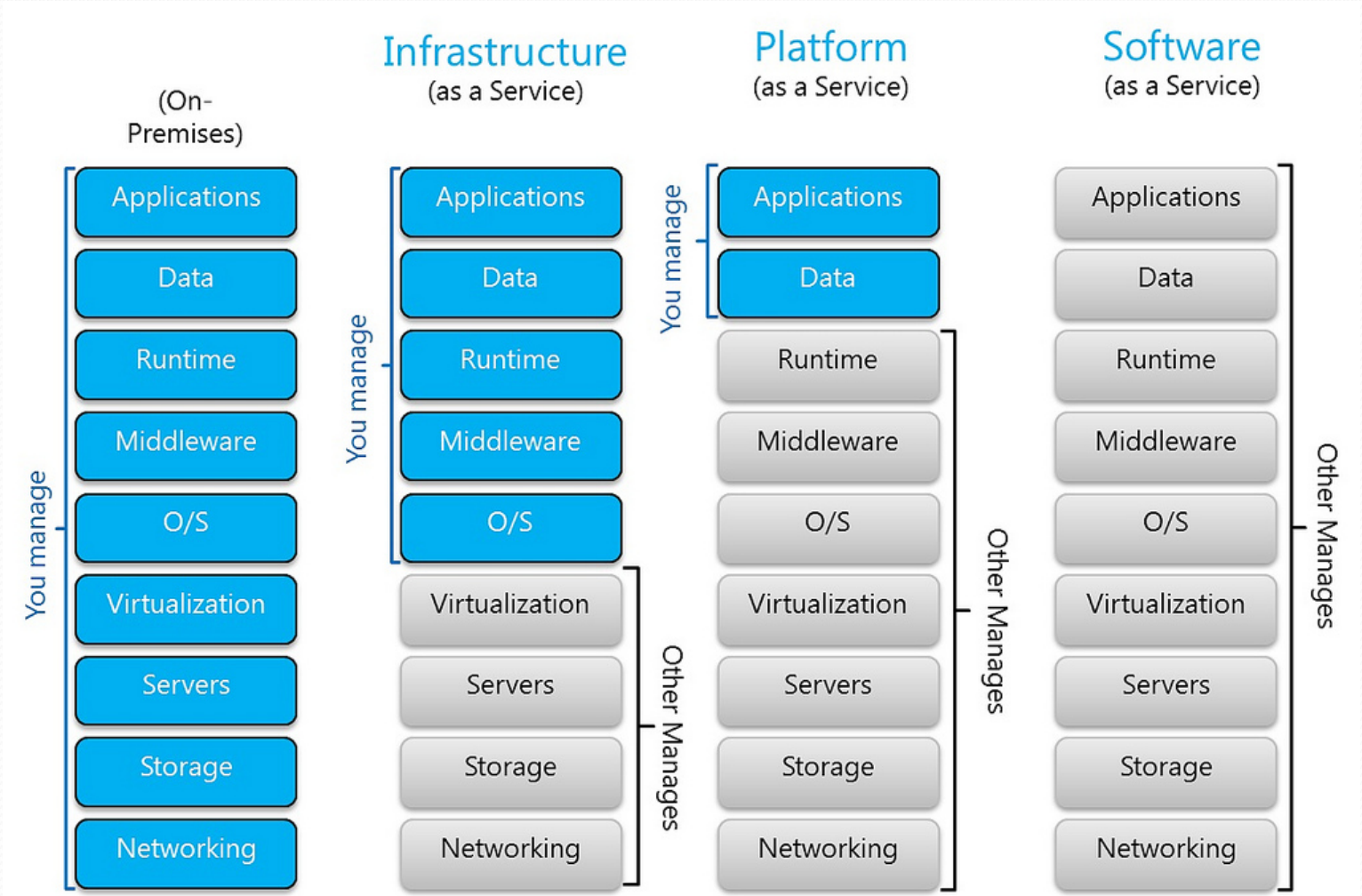
History…a few key points

- "Computing delivered as a public utility"
  - John McCarthy, MIT, 1961
- First Machine Virtualization
  - IBM M44/44X – simulated multiple 7044s - mid 1960s
- False dawn
  - …technology wasn't ready (h/w, s/w, telcoms)
- "Cloud" becomes prevalent in telecoms
  - 1990s - Virtual Private Networks
- X86 server virtualization
  - VMware vCentre 2003
- Amazon Web Services (AWS)
  - 2006

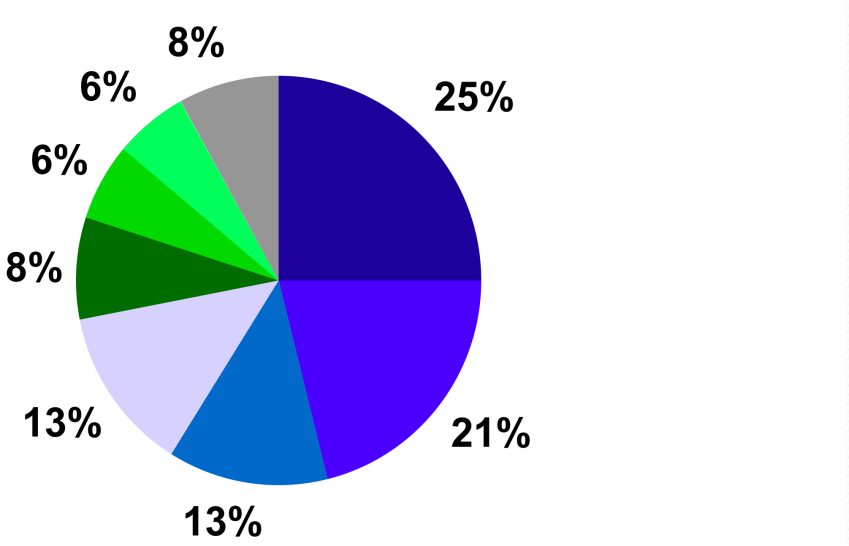
Key Cloud Types



XaaS

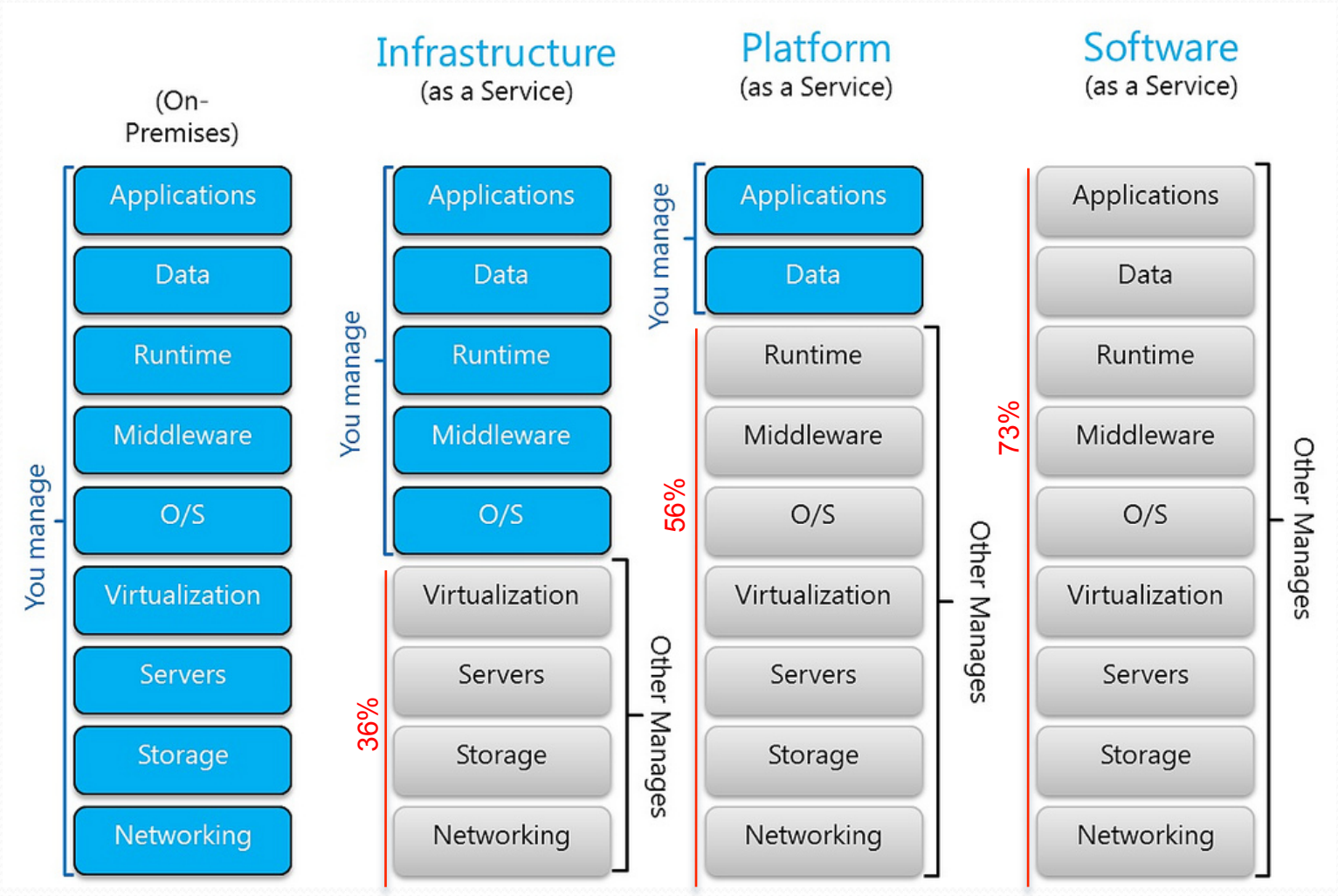

(On-Premises)
Infrastructure (as a Service)
Platform (as a Service)
Software (as a Service)
You manage
Applications
Data
Runtime
Middleware
O/S
Virtualization
Servers
Storage
Networking
Other Manages

Where does Enterprise IT spend its money?



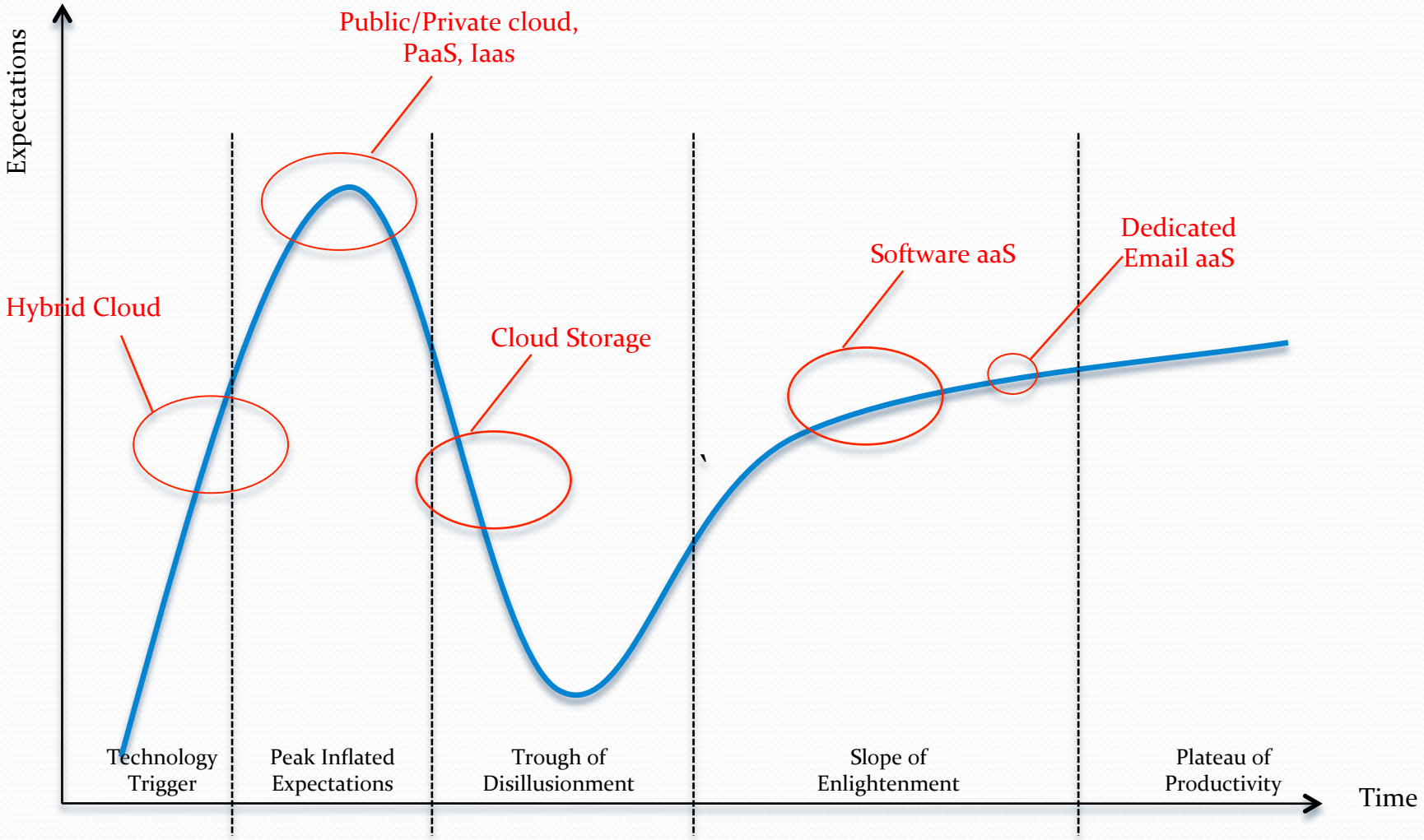
Percentage of IT budget in 2010, UK

XaaS


Percentage of IT Spend
(On-Premises)
Infrastructure (as a Service)
Platform (as a Service)
Software (as a Service)
You manage
Applications
Data
Runtime
Middleware
O/S
Virtualization
Servers
Storage
Networking
36%
56%
73%
Other Manages

Impact on Enterprise Finances

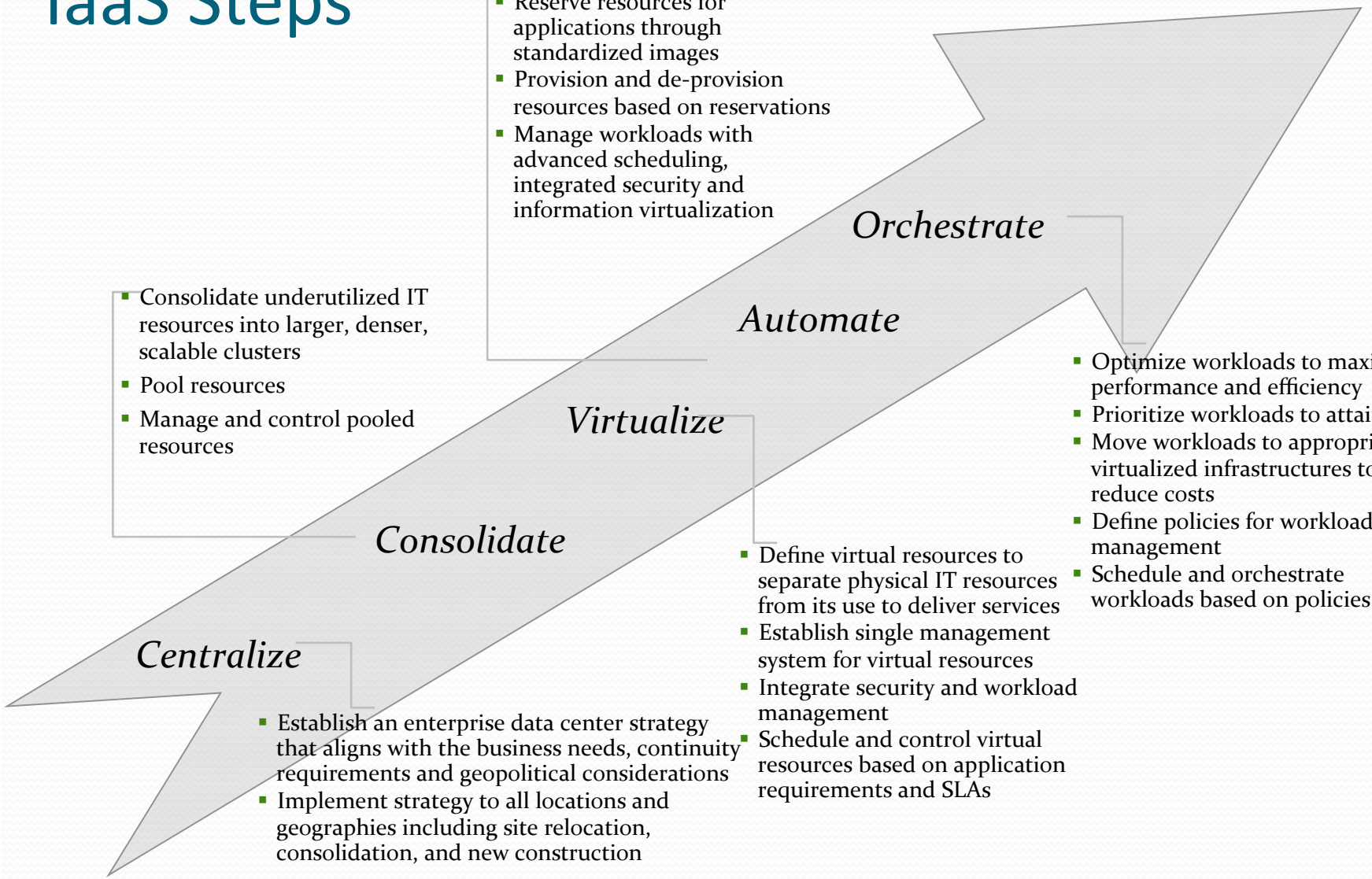
Cloud on the Hype Curve



How to ride the curve

- Cloud requires a journey not a single leap
- Continually build support by continually showing the gains
  - Compute/Network/Storage to private IaaS
  - Cloudbursting
  - Private PaaS
  - True Public Clouds
- It's just as much about people and organizations as it is about technology

IaaS Steps



- Reserve resources for applications through standardized images
- Provision and de-provision resources based on reservations
- Manage workloads with advanced scheduling, integrated security and information virtualization

- Optimize workloads to maximize performance and efficiency
- Prioritize workloads to attain SLAs
- Move workloads to appropriate virtualized infrastructures to reduce costs
- Define policies for workload management
- Schedule and orchestrate workloads based on policies

- Consolidate underutilized IT resources into larger, denser, scalable clusters
- Pool resources
- Manage and control pooled resources

- Define virtual resources to separate physical IT resources from its use to deliver services
- Establish single management system for virtual resources
- Integrate security and workload management
- Schedule and control virtual resources based on application requirements and SLAs

- Establish an enterprise data center strategy that aligns with the business needs, continuity requirements and geopolitical considerations
- Implement strategy to all locations and geographies including site relocation, consolidation, and new construction

PaaS – “Brace for Impact”

- IaaS really only affects the IT infrastructure groups…
- …but PaaS requires a real change to the way software is developed
  - Standardize on the services you will use
  - Do it as “good practice” internally long before you use it in the (public) cloud
  - Assume scale-out from the start
- Emerging PaaS Tool Sets
  - VMware Cloud Foundry (from Springsource)
  - Amazon Elastic Beanstalk
  - Google App Engine
  - Microsoft Azure
  - Etc. etc.
- Social Media services
  - …and the architecture and capability to integrate them

The (Public) Cloud Adventures' Guide

- Don't be afraid to experiment…all you need is a credit card ☺
- Capabilities are exploding, ranging from:
  - "Give me a 4G Red Hat Image", to
  - "Deploy a multi-tier application, with load-balanced front-end in a separate VLAN tied to a clustered 10 VM backend, with incremental NetApp storage ability…and tear it down again automatically in 3 days (e.g. when my targeted sales campaign is over)"

The (Public) Cloud Adventures' Guide

- Build an incremental plan to utilize public cloud, gaining knowledge of:
  - Flexibility & Capacity
  - Data Management
  - Security
    - Storage, Network, OS, Middleware
    - Auditing capabilities
- Availability/Uptime of Public Cloud is still variable
  - ….remember to distinguish between availability of your virtual systems vs availability of the cloud providers' s/w to change what is provisioned
- Who's gonna be your partner?
  - Expect to see telcos, consultancies, service companies all provide public clouds

For Cloud Providers…

- You now own a hotel
- Your job is to keep all the rooms (i.e. compute/network/storage/software) as full as possible
  - ….without turning away too many customers due to being too full
- Initial capabilities to help:
  - Over-commit, reservations etc.
- Next wave of capabilities emerging:
  - Usage/Trend analytics, What-if, Plan recommendations
  - Distributed, Cloud-centric provisioning models
    - Many thousands of VMs per hour provisioning capability

The End Goal

The fundamental change we are driving to is the "Pay as you Go" DataCentre, which delivers…

"Computing as a utility"

…so that we enable Business as a Service (BaaS)